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new plants, and leaves having petioles of two inches in length when fully grown. I have come to the conclusion that I have been hoodwinked, and that very unusual prey has this time been a victim of Venus's Fly-trap! Is it not possible that the Dionæa grew in close and intimate connection with the roots and stems of some companion, and that it is the foster plant which flourishes, while the Fly-trap perished?—ELIZABETH L. H. WILLIS, *Charleston, S. C.*

EDITORIAL NOTES.

DR. J. G. BAKER has described, in the *Journal of Botany*, six new species of ferns from Costa Rica, collected by Mr. P. G. Harrison. They are equally divided among *Asplenium*, *Nephrodium*, and *Polypodium*.

CHINA seems to be yielding much new material to the authorities at Kew It is somewhat of a pity that the native plants of China have felt for so long a time the pressure of man's presence before they could be studied. It will be hard to eliminate the human factor and get a true view of the indigenous flora, although Chinese customs would prevent much inroad of foreign plants. In the December *Journal of Botany* Dr. Hance describes two new epiphytic orchids, and four *Cæsalpinieæ*. Among the latter a new *Gymnocladus* is especially notable. A few years ago our North American *G. Canadensis*, L., was the only representative of the genus; then *G. Chinensis*, Baill., a Chinese species, was discovered; and now a second Chinese species, *G. Williamsi*, Hance, is described, and curiously enough it is much more nearly related to the American form than to *G. Chinensis*. A new *Gleditschia* is also one of the four.

REV. B. SCORTECHINI has described a new genus of Rubiaceous trees from the Malayan Peninsula. It is called *Creaghia*, and belongs to the tribe *Cinchoneæ*. This type species is about 40 feet high, and bears the name of *C. fagrææopsis*

IN THE DECEMBER number of the *American Monthly Microscpical Journal* the editor makes a complaint that Mr. J. Kruttschnitt's work on fertilization of the ovule has not attracted the attention it deserves. It is rather sweeping, to say the least, to observe that botanists have ignored it without giving it the slightest attention, as though they had some small spite against Mr. Kruttschnitt. Valuable work is appreciated by every botanist, and none are more eager to hail any discovery that will break up some encrusted theory. In fact, we rather incline to startling deductions too eagerly. But when a man undertakes to prove that the descent of the pollen tube to the ovule is a myth he contradicts, not our text-books, for in modern botany these are not depended on, but the every day experience of our laboratories. The demonstration of pollen tubes in the ovary cavity, and in the micropyle itself, is so comparatively easy that no class has advanced very far into laboratory work without successfully accomplishing it. It is almost like a man denying that hydrogen and oxygen do not exist in water. What chemist would stop to notice a theory based upon that supposition? What botanist has time to devote to one who stands upon such a plane that no starting point can be found short of the elements of botany?

The inference is fairly ridiculous that in these days of keen investigation botanists would accept upon faith one of the most fundamental statements of their science, and that too, when vastly improved instruments and methods have rendered its testing a matter of comparative ease. The fact that it is not such a very recondite thing is shown by the statement already made that its demonstration is a very ordinary operation of the botanical laboratories of to-day, and the path broken by Amici in the early part of this century has often been traveled since. We do not pretend to say that everything has been discovered with reference to this process of fertilization. Very far from it, for many things yet remain to be told. But when a worker begins by saying that pollen-tubes are not found even in the cavity of the ovary, much less connected with the ovules, we must shake our heads, for too many of us have seen them in both places. And then what will botanists think of the statement that "comparatively few of the botanists ever use a compound microscope, and of those who do not many are aware of the amount of labor involved in a thorough microscopical investigation by means of thin sections!" Now, we do not wonder at the rest of the editorial, for such lack of information concerning the botanical laboratories and methods of to-day could only mean unqualified ignorance of their results. It is freely granted that the old methods are still extensively used, but far from enough to justify any such statement as quoted above, and not at all by the recognized leaders in botany. The closing statement we heartily accept. and see no good reason why we should not, for it says, "It is well known that competent observers claim to have traced the pollen-tubes through the styles of certain plants. This, however, does not prove that this process of fertilization is universal." We should say not.

Let some microscopist, laying aside all but the simplest parts of his paraphernalia, take the flowers of any common small plant, as *Capsella* for instance. and clearing with potash examine a section of the ovary, and it will be a strange chance if any number of the pollen-tubes are not found in the cavity of the ovary and some even sticking to micropyles. In conclusion it should be said that the writer has examined a full series of Mr. Kruttschnitt's slides.

IN THE LAST (January) *American Naturalist* Prof. Bessey refers to a difference of opinion, rather warmly expressed in *Nature*, between Rev. George Henslow and W. T. Thistleton Dyer. These distinguished botanists somewhat represent the old and new methods of teaching botany. As in every reform the first tendency is to swing to the opposite extreme, so the new botany begins by scouting the old and fairly abhorring classification. It is the case of a superstructure despising the foundation upon which it rests, for systematic botany necessarily came first, and if it does not contain all the botanical problems, or even the most important ones, it certainly presents some that are extremely important and worthy any student's consideration. That systematic botany is a dried pod, out of which all the seeds have rattled, is a grand mistake, for our material is now but fairly brought together for the work of the monographer to begin. This is no plea for the study of systematic botany as opposed to the structural and physiological, as the writer's own laboratory will abundantly testify. But it is meant to call attention to the fact that the pendulum has swung farther away from the old side than it can stay, and that a study of botany must include the systematic phase. Whether a class should begin with Gray's text-books and Manual, and then follow Bessey, or begin with protoplasm and run the whole gamut of tissues and tissue systems, and then study classification, is for the individual teacher to decide, and is as often a question of convenience as anything else. The point is that both kinds of work should be done. If the time allotted to such work is comparatively short, the very best method is to combine the two, and beginning with Protococcus, let types of classification and of structure advance with equal step. The writer is not sure but that this is the best way to begin the study of botany at any rate, as it surely results in a broader, more comprehensive view of plants than either of the other methods alone. But for convenience of application, as well as a means of awakening general interest in plants, systematic botany holds, and always will hold, a very important place. Of course it becomes disastrous when the impression is left that all of a plant is its name, just as it would be if the examination of some dozen types should lead to the conclusion that all plant structures had been studied.

C. R. ORCUTT has begun the publication of a scientific paper at San Diego, California, entitled *The West-American Scientist,* and is meant to be "a popular review and record for the Pacific coast." It is a four-page octavo, issued monthly, and costs fifty cents a year.

IT IS REMARKABLE what an amount of material can be collected with reference to a single plant. The last number (No. 4) of the quarterly *Drugs and Medicines of North America* continues the subject of *Hydrastis Canadensis*, and the next number will pursue it still farther.

THE DOUBT THROWN upon Koch's cholera bacillus by the work of Finkler and Pryor has been completely dispelled by Koch himself, who not only convicts his critics of cultures that are not pure, but also has readily produced cholera by the inoculation of a solution of a pure culture, even in so small an amount as .01 of a drop. Koch's results have been amply confirmed also by E. von Ermengen, and the so-called cholera bacillus and cholera seem bound together by ties that can not be broken.

IT HAS GENERALLY been supposed by biologists that a distinct department of "microscopy" had about as good a right to exist as a department of razors or sewing-machines. And this is true when taken as such a department is sometimes conducted; but any biologist reading Dr. Whitman's note in the January *American Naturalist* will discover that he wants to keep his eye on that department as Dr. Whitman proposes to conduct it or he will miss something he ought to know. When "microscopy" becomes less subjective and more objective, biologists had better prick up their ears.